AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. **(currently amended)** A method [[for]] of embedding a digital watermark on a wavelet lowest subband of an original image, the method comprising the steps of:

wavelet transforming the original image into n levels;

setting ~~a DC component region~~ the wavelet lowest subband of the ~~a multi-stage~~ wavelet-transformed original [[copy]] image as [[to]] a watermark embedment region; [[, and]]

high-frequency filtering an original picture LL_n of the watermark embedment region to generate a mirror picture LL_n' from which a high frequency component [[is]] of the original picture LL_n has been eliminated;

generating (i) index information [[for]] designating a plurality of pixel positions within the watermark embedment region where ~~on which~~ the watermark is to be embedded ~~within the watermark embedment region~~, and (ii) a ~~watermark~~ sequence of watermark values to be embedded in said pixel positions, respectively;

calculating an embedment strength λ for each said pixel position of the watermark embedment region, considering a variance degree of an original picture LL_n coefficient value;

~~in case the watermark sequence is sequentially embedded on an embedded position designated by the index information, mutually comparing the original picture LL_n coefficient value~~ for each said pixel ~~embedded~~ position, selectively altering the original picture LL_n coefficient value based on (a) [[with]] a corresponding mirror picture LL_n' coefficient value, ~~and then altering the original picture LL_n coefficient value depending on~~ (b) the watermark value to be embedded in said

pixel position, and (c) ~~with reference to~~ the embedment strength λ of ~~a corresponding~~ said pixel position ~~to embed the watermark~~; and

selectively embedding the watermark at each said pixel position with the selectively altered original picture LL_n coefficient value while skipping watermark embedment where the ~~in case the~~ original picture LL_n coefficient value before and after said altering differs by more than ~~altered by watermark embedment is differentiated above~~ a predetermined value associated with ~~reference to~~ the corresponding embedment strength λ ~~in comparison with the coefficient value before altered, skipping the watermark embedment for the position~~.

2. **(currently amended)** The method of claim 1, wherein in the step of high frequency filtering ~~component eliminating step~~, the high-frequency component is eliminated ~~from a picture of the watermark embedment region~~ through Wiener filtering.

3. **(currently amended)** The method of claim 1, wherein in the embedment strength calculating step, the embedment strength λ in every said pixel position in ~~is calculated for~~ the watermark embedment region is calculated according to the following Equations (1) and (2):

$$NVF(i,j) = \frac{\sigma^2_{\max}}{\sigma^2_{\max} + \theta\sigma^2(i,j)} \quad \ldots\ldots\ldots\ldots (1)$$

$$\lambda(i,j) = S_e \bullet (1 - NVF(i,j)) + S_f \bullet NVF(i,j) \quad \ldots\ldots\ldots\ldots (2)$$

$\sigma^2(i,j)$: a local variance value for a peripheral region centering on the position (i,j);

$\sigma^2_{\max}$: a maximum local variance value in the watermark embedment region;

S_e, S_f and θ : embedment strength controlling values.

4. **(currently amended)** The method of claim 1, wherein, in the ~~watermark embedding~~ step of selectively altering the original picture LL_n coefficient value, if ~~in case~~ the watermark value `1` is to be embedded in a corresponding pixel ~~embedded~~ position i, the original picture coefficient value $LL_n(i)$ is compared with [[a]] an added value $LL_n'(i)+\lambda(i)$ obtained by adding the embedment strength to the mirror picture coefficient value and ~~such that~~

if the original picture coefficient value is greater [[more]] than the added value, the original picture coefficient value is maintained as [[it]] is, and

if the original picture coefficient value is less than the added value, the original picture coefficient value of the pixel position is ~~substituted for~~ assigned the added value.

5. **(currently amended)** The method of claim 1, wherein, in the ~~watermark embedding~~ step of selectively altering the original picture LL_n coefficient value, if ~~in case~~ the watermark value `-1` is to be embedded in a corresponding ~~embedded~~ pixel position i, the original picture coefficient value $LL_n(i)$ is compared with [[a]] a subtracted value $LL_n'(i)-\lambda(i)$ obtained by subtracting the embedment strength from the mirror picture coefficient value and ~~such that~~

if the original picture coefficient value is less than the subtracted value, the original picture coefficient value is maintained as [[it]] is, and

if the original picture coefficient value is greater [[more]] than the subtracted value, the original picture coefficient value is ~~substituted for~~ assigned the subtracted value ~~for alteration~~.

6. **(currently amended)** The method of claim 1, wherein the initial original picture efficient value is maintained to skip [[in]] the watermark embedment at each pixel position where the original picture LLn coefficient value before and after said altering differs by ~~embedding skipping step, in case the original picture coefficient value altered by the watermark embedment is differentiated from an initial original picture coefficient value before the watermark embedment at~~ more than three times the embedment strength~~, the initial original picture efficient value is maintained to skip the watermark embedment~~.

7. **(currently amended)** The method of claim 1, wherein ~~in the watermark embedding step,~~ the watermark ~~sequence~~ is repetitively embedded in each pixel ~~embedded~~ position a [[at]] predetermined number of times ~~being set~~ depending on robustness and screen degradation degree.

8-9. (canceled)

10. **(new)** A watermark extracting method of extracting a watermark embedded by the method of claim 1 from a watermark embedded image, the watermark extracting method comprising the steps of:

wavelet transforming the watermark embedded image into the same n levels;

defining a wavelet lowest subband of the wavelet-transformed watermark embedded image as a watermark extracted region;

high-frequency filtering an original picture LL_{nE} of the watermark extracted region to generate a mirror picture LL_{nE}' from which a high frequency component of the original picture LL_{nE} has been eliminated;

receiving index information designating a plurality of pixel positions within the watermark extracted region where the watermark has been embedded;

comparing an original picture LL_{nE} coefficient value with a mirror picture LL_{nE}' coefficient value at each said pixel position to extract a sequence $W_E(i)$ of watermark values;

receiving a key value to regenerate an original sequence W(i) of watermark values used at the time of watermark embedment; and

determining a similarity between the extracted watermark sequence and the original watermark sequence, and judging whether or not the watermark exists depending on whether or not the similarity is greater than a predetermined critical value.

11. **(new)** The method of claim 10, wherein, in the watermark extracting step,

if the original picture LL_{nE} coefficient value is less than the mirror picture LL_{nE}' coefficient value, a watermark value `-1` is extracted from the respective pixel position;

otherwise, a watermark value `+1` is extracted.